

GENERIC · POWERTRAIN

P042A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P042A

Catalyst Temperature Sensor Circuit Bank 1 Sensor 2

P042A indicates that the powertrain control module (PCM) has detected an abnormal voltage signal from the catalyst temperature sensor located after the catalytic converter on bank 1, sensor 2. The PCM expects the sensor's output to follow a predictable pattern as the catalyst heats up, and this code sets when the signal is out of range, stuck, or otherwise implausible for the current operating conditions.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- A slight decrease in fuel economy if the PCM enters a default strategy for catalyst monitoring.
- In rare cases, a rough idle or hesitation if the sensor signal is erratic and affects fuel trim calculations.
- Intermittent warning light that may clear and reset after the vehicle sits overnight.
- Failed emissions inspection due to the stored code and incomplete readiness monitors.

Common causes, most likely first

- 1 Faulty catalyst temperature sensor (bank 1 sensor 2) sending an implausible signal.
- 2 Damaged or corroded wiring or connector at the sensor or along the circuit to the PCM.
- 3 Exhaust leaks before or near the sensor allowing outside air to affect temperature readings.
- 4 A catalytic converter that is overheating or failing, causing sensor readings outside the expected range.
- 5 PCM software issue or internal fault in the sensor signal processing circuit.
- 6 Poor electrical ground connection for the sensor circuit.
- 7 Aftermarket or incorrect sensor installed that does not meet OEM specifications.



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and sensor voltage readings to confirm the fault is current.
- 2 Visually inspect the sensor, connector, and wiring for damage, corrosion, or loose pins; repair as needed.
- 3 Check for exhaust leaks around the catalytic converter and sensor bung using a smoke machine or visual inspection.
- 4 Measure the sensor's resistance and compare to manufacturer specifications; replace if out of range.
- 5 Backprobe the sensor signal circuit at the PCM and compare voltage with the scan tool reading to rule out wiring faults.
- 6 If the sensor and wiring are good, perform a catalyst efficiency test to determine if the converter is degrading.
- 7 Clear the code, perform a drive cycle to verify the repair, and ensure the monitor completes without resetting the code.

What most technicians overlook on P042A

- A catalyst temperature sensor code often sets because of a failing catalytic converter rather than the sensor itself, so replacing the sensor without testing converter efficiency can lead to a quick comeback.
- Exhaust leaks upstream of the sensor are a common cause that mimics a sensor failure, and they can be invisible without a smoke test or careful inspection of the flex pipe and flanges.
- The PCM may set P042A intermittently due to a poor ground connection at the chassis or engine block, which is frequently missed during component-level testing.
- Aftermarket sensors with incorrect resistance curves can trigger this code even when new, so always verify the part meets OEM specifications before installation.
- This code does not always mean the sensor is dead; a stuck-open thermostat or low coolant level can prevent the catalyst from reaching operating temperature, causing the sensor signal to fall outside the expected range.

Can I keep driving with P042A?

You can usually continue driving with P042A, but avoid prolonged idling and heavy loads until the fault is repaired, as a failing catalyst can worsen and lead to more costly damage. Have the vehicle diagnosed promptly to prevent secondary issues and to ensure it will pass an emissions test.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Infrared thermometer
- Smoke machine for exhaust leak detection
- Socket set and wrench set
- Wiring diagram for the specific vehicle



Reading P042A

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 4** Auxiliary emission controls.
- 2A** The exact fault within that area.

Often seen with

P0420 Catalyst System Efficiency Below Threshold (Bank 1) · **P0421** Warm Up Catalyst Efficiency Below Threshold (Bank 1) · **P0422** Main Catalyst Efficiency Below Threshold (Bank 1) · **P0423** Heated Catalyst Efficiency Below Threshold (Bank 1) · **P0430** Catalyst System Efficiency Below Threshold (Bank 2)

See it working

Watch the animated explainer [How Drive-by-Wire Works: Electronic Throttle Body](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p042a/>

